

New Policy

STATIONARY EQUIPMENT REFRIGERANT MANAGEMENT

Policy summary: This policy aims to minimize emissions of high Global Warming Potential refrigerants used in stationary non-residential equipment through:

- facility registration, leak detection and monitoring, leak repair, system retrofit and retirement, required service practices, and recordkeeping and reporting; and
- eventual replacement of non-residential refrigeration equipment at the end of its life by equipment using no-GWP or lower GWP substances, where such alternatives are available and practicable.

The policy would affect facilities with refrigeration units containing at least 50 pounds of refrigerant, beginning with a voluntary pilot program focused on leak detection and repair.

Economy-wide GHG emissions reduced 2020	1.2 million metric tons CO ₂ e; 1.3%
Net annual \$ savings statewide	\$1.6 million
Cumulative \$ savings statewide 2012-2020, discounted ⁶³	\$14 million

Clean energy economy impacts: Additional jobs in companies that engage in refrigeration system leak detection and repair. Cost savings to affected facilities from lower use of chemicals to refill systems.

Rationale: Common refrigerants include several types of hydrofluorocarbons (HFC). These chemicals have global warming potentials up to 12,000 times more potent than CO₂. Emissions from this source category have been growing steadily since the 1990s, in part due to the replacement with HFC of ozone depleting refrigerants targeted under the Montreal Protocol.

Design issues: California Air Resources Board (CARB) finalized a regulation⁶⁴ effective November 19, 2010, phasing in requirements for a leak detection and repair program for refrigeration units containing a charge of 50 pounds of refrigerant or greater. Massachusetts could implement a voluntary program that transitions into utilization of California's regulations as a model. Most of the businesses involved have been subject to similar EPA regulation on ozone-depleting chemicals used in refrigeration.

GHG impact: 1.2 million metric ton reduction in CO₂e in 2020.

Implementation issues: Implementing a program to reduce refrigerant emissions requires development of an inventory of facilities using large quantities of refrigerants. The number of facilities can be estimated from the Economic Census 2007,⁶⁵ a profile of U.S. businesses conducted every five years by the US Census Bureau. In addition, MassDEP will receive 2010 refrigerant emission data from large emitters by April 15, 2011, under the mandatory

⁶³ In 2008 dollars, discounted at a 5 percent rate from current year.

⁶⁴ <http://www.arb.ca.gov/regact/2009/gwprmp09/gwprmp09.htm>

⁶⁵ <http://www.census.gov/econ/census07/>, U.S. Census Bureau reporting 1,305 supermarkets and other groceries; 34 warehouse clubs and supercenters; 29 refrigerated warehousing and storage facilities; 523 cold product merchant wholesalers; and 153 cold manufacturing facilities in Massachusetts.

Massachusetts GHG emissions reporting program. MassDEP has already established relationships with larger supermarket store chains through efforts to encourage composting of food waste and reduce use of disposable shopping bags.

A number of Massachusetts grocery stores participate in EPA's voluntary "GreenChill Advanced Refrigeration Partnership,"⁶⁶ including Hannaford Bros., Price Chopper, Shaw's Supermarkets, and Whole Foods. In September 2009, a Star Market in Chestnut Hill became the first U.S. store certified at the Platinum level under EPA's GreenChill Store Certification program, while a Whole Foods store in Dedham received Silver certification in August 2009.⁶⁷

On November 8, 2010, EPA signed final regulation 40 CFR 98 "Mandatory Reporting of Greenhouse Gases," Subpart L "Fluorinated Gas Production" and Subpart Q "Importers and Exporters of Fluorinated GHGs Inside Pre-charged Equipment or Closed-cell Foams,"⁶⁸ which require manufacturers and importers of substances including high GWP refrigerants to report GHG emissions, beginning with 2011 emissions reported by March 31, 2012.

Costs: Costs incurred by regulated entities pertaining to leak detection and repair can be divided into technology costs (equipment upgrades to automatic leak detection), operation and maintenance costs (leak detection, inspection, repair, annual program fee), and recordkeeping costs (data management and reporting). CARB's analysis of a similar policy indicates 2020 compliance costs ranging from \$14 per facility with systems containing 50 to 200 pounds of refrigerant, \$30 per facility with systems containing up to 2,000 pounds, and savings of \$8,700 per facility with systems containing 2,000 pounds or more (net savings for larger facilities, due to economies of scale in reducing leakage).

CARB estimated savings of \$2 per metric ton CO₂e in the year 2020 after the proposed regulation is fully implemented. This estimate may understate the actual net savings, since it does not account for rising refrigerant prices, energy savings due to optimized system operation, or benefits from mitigated climate impacts. Based on the number of facilities estimated to be affected by the policy (about 2,000) and an estimated distribution of the facilities by size, the policy is estimated to provide net savings of \$1.6 million per year statewide.

Legal authority: MassDEP has authority to promulgate a regulation under Massachusetts General Law Chapter 111, Section 142 to create an enforceable refrigerants control program to prevent air pollution.

Uncertainty: Technical risks associated with leak detection and repair are expected to be relatively small. The practices promoted by the policy are already established. Implementation risks relate to the number and diversity of facilities that may be affected by the policy, which could complicate compliance assistance, verification, and enforcement. The effectiveness of the policy depends on facility owners actually implementing the practices called for in the policy, which may in turn depend on ensuring that technicians are trained and aware of the requirement.

⁶⁶ <http://www.epa.gov/ozone/partnerships/greenchill/>

⁶⁷ <http://www.epa.gov/ozone/partnerships/greenchill/certcenter.html>

⁶⁸ <http://www.epa.gov/climatechange/emissions/subpart/dd.html>